National Qualifications

Physics
Assignment
General assessment information

This pack contains general assessment information for centres preparing candidates for the assignment Component of Higher Physics Course assessment.

It must be read in conjunction with the specific assessment task for this Component of Course assessment, which may only be downloaded from SQA's designated secure website by authorised personnel.

Valid from session 2014/15 and until further notice

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Introduction

This is the general assessment information for Higher Physics assignment.

This assignment is worth 20 marks out of the total of 120 marks available for this Course. The Course will be graded A–D.

Marks for all Course Components are added up to give a total Course assessment mark which is then used as the basis for grading decisions.

This is one of two Components of Course assessment. The other Component is a question paper.

The assessment task will be set and externally marked by SQA and conducted in centres under the conditions specified by SQA.

This document describes the general requirements for the assessment of the assignment Component for this Course. It gives general information and instructions for assessors.

It must be read in conjunction with the assessment task for this Component of Course assessment.

Equality and inclusion

This Course assessment has been designed to ensure that there are no unnecessary barriers to assessment. Assessments have been designed to promote equal opportunities while maintaining the integrity of the qualification.

For guidance on assessment arrangements for disabled candidates and/or those with additional support needs, please follow the link to the Assessment Arrangements web page: www.sqa.org.uk/sqa/14977.html

Guidance on inclusive approaches to delivery and assessment in this Course is provided in the *Course Support Notes*.

What this assessment covers

This assessment contributes 20% of the total marks for the Course.

The assessment will assess the skills, knowledge and understanding specified for the assignment in the *Course Assessment Specification*. These are:

- applying physics knowledge to new situations, interpreting information and solving problems
- selecting information and presenting information appropriately in a variety of forms
- processing information (using calculations, significant figures and units, where appropriate)
- drawing valid conclusions and giving explanations supported by evidence/justification
- evaluating experimental procedures, identifying sources of error and suggesting improvements
- communicating findings/information effectively

Assessment

Purpose

The purpose of this assessment is to generate evidence for the added value of this Course by means of an assignment.

Assessment overview

Assessment should take place when the candidates are ready to be assessed.

This assignment requires candidates to apply skills, knowledge and understanding to investigate a relevant topic in physics. The topic should draw on one or more of the key areas of the Course. The assessor must review the topic chosen to ensure that it is appropriate.

The assignment offers challenge by requiring skills, knowledge and understanding to be applied in a context that is one or more of the following:

- unfamiliar
- familiar but investigated in greater depth
- integrating a number of familiar contexts

The assessor has responsibility for ensuring that the topic to be investigated by the candidate is sufficiently demanding. Some examples of suitable investigations are provided in the Higher Physics *Course and Unit Support Notes*. None of these examples are mandatory: they are intended simply to illustrate the level of demand that is expected of an assignment at Higher. Assessors and candidates should choose relevant topical contexts appropriate to the learning and teaching, but it is the assessor's responsibility to ensure that the topic will allow the candidate to provide evidence of an appropriate standard to achieve the full range of marks available.

- This assignment has two stages:
-
- a **research** stage
- a **communication** stage

The **research** stage involves gathering information/data from the internet, books, newspapers, journals, experiment/practical activity or any other appropriate source. Candidates must select, use and record their referenced sources. An appropriate experiment/practical activity must be used as one of the data sources. The Researching Physics unit could be used as one of your experimental/practical investigation data sources. Any practical work undertaken will not be assessed.

Group work approaches are acceptable as part of the **research** stage when gathering information/data or undertaking an experiment/practical activity,

but assessors must ensure that candidates are able individually to meet the evidence requirements of this assessment.

In the course of their assignment, candidates are required to:

- choose a relevant topic in physics
- request the assessor to review the appropriateness of the chosen topic
- state appropriate aim(s)
- research the topic by selecting relevant data/information
- process, analyse and present relevant data/information
- state conclusion(s)
- evaluate their investigation
- explain the underlying physics of the topic researched
- present the findings of the research in a report.

The evidence for this assignment will consist of the report. Of the total of 20 marks available for the assignment, the marking instructions provide 16 marks for skills and 4 marks for knowledge and understanding. The table below shows how these marks are allocated to each of the criteria against which the evidence will be assessed.

Criteria	Mark allocation
Aim(s)	1
Applying knowledge and understanding of physics	4
Selecting information	2
Processing and presenting data/information	4
Uncertainties	1
Analysing data/information	2
Conclusion(s)	1
Evaluation	3
Presentation	2

Assessment conditions

Assessors must exercise their professional responsibility in ensuring that evidence submitted by a candidate is the candidate's own work.

Candidates should start the assignment at an appropriate point in the Course. This will normally be when they have started work on the Units in the Course and have sufficient knowledge and skills to undertake the assignment. It is recommended that no more than eight hours is spent on the whole assignment.

This assignment has two stages:

- a **research** stage
- a **communication** stage, during which the report is written

Candidates may access any appropriate resources during the **research** stage of this assignment.

During the **communication** stage of this assignment, candidates should have access to the following resources:

- Material collected by the candidate during the **research** stage. This may include, for example, statistical, graphical, numerical or experimental data; data/information from the internet; published articles or extracts; notes taken from a visit or talk; notes taken from a written or audio-visual source.

The assessor should check that the material used by the candidate in this communication stage conforms to the criteria above. It must not include a prepared report.

Candidates may produce their report over a period of time. If the report is done over a number of sessions, then the assessor must retain the candidate's work between sessions. Following completion of the report there should be **no** re-drafting.

As a guide, evidence which meets the requirements of this Component of Course assessment should be 800-1500 words, excluding tables, charts and diagrams.

The requirements of the assignment should be made clear to candidates at the outset.

Reasonable assistance may be provided prior to the formal assessment process taking place. Reasonable assistance may be given on a generic basis to a class or group of candidates. The term 'reasonable assistance' is used to try to balance the need for support with the need to avoid giving too much assistance. If any candidates require more than what is deemed to be 'reasonable assistance', they may not be ready for assessment or it may be that they have been entered for the wrong level of qualification.

In the **research** stage, reasonable assistance may include:

- directing candidates to the Instructions for Candidates
- clarifying instructions/requirements of the task
- advising candidates on the choice of the topic or issue

In the **communication** stage, reasonable assistance may include:

- directing candidates to the Instructions for Candidates
- clarifying instructions/requirements of the task

At any stage, reasonable assistance does **not** include:

- providing model answers

- providing feedback on drafts

The **research** stage will be conducted under some supervision and control. This means that although candidates may carry out some research outwith the learning and teaching setting, assessors should put in place processes for monitoring progress and ensuring that the work is the candidate's own and that plagiarism has not taken place.

Assessors should put in place mechanisms to authenticate that the research is the candidate's own work. For example:

- regular checkpoint/progress meetings with candidates
- short spot-check personal interviews
- checklists which record activity/progress
- photographs, film or audio evidence
- checking candidate lab books/blogs

Group work approaches are acceptable as part of the **research** stage. However, there must be clear evidence for each candidate to show that the candidate has met the evidence requirements.

The **communication** stage will be conducted under a high degree of supervision. This means that:

- candidates must be in direct sight of the assessor (or other responsible person) during the period of the assessment
- candidates must not discuss their work with each other

Evidence to be gathered

The following candidate evidence is required for this assessment:

- a report

The report will be submitted to SQA, within a given timeframe, for marking. The same report cannot be submitted for more than one subject.

General Marking Instructions

In line with SQA's normal practice, the following general marking instructions are addressed to the marker. They will also be helpful for those preparing candidates for Course assessment.

Evidence will be submitted to SQA for external marking.

All marking will be quality assured by SQA.

General Marking Principles for Higher Physics assignment

This information is provided to help you understand the general principles you must apply when marking candidate responses to this assignment. These principles must be read in conjunction with the detailed marking instructions, which identify the key features required in candidate responses.

(a) Marks for each candidate response must always be assigned in line with these General Marking Principles and the Detailed Marking Instructions for this assessment.

(b) Marking should always be positive. This means that, for each candidate response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding: they are not deducted from a maximum on the basis of errors or omissions.

Detailed Marking Instructions for Higher Physics assignment

Criteria	Expected response	Max mark	Additional guidance
Aim(s)	Candidate states appropriate aim(s)	1	The aim(s) must be clearly stated and appropriate to the investigation undertaken.
Apply knowledge and understanding of physics	Candidate explains the topic, using the underlying physics	4	**4 marks** should be awarded to a candidate who has ♦ provided **correct explanations** of the topic researched using physics terms/ideas which are at a depth appropriate to Higher Physics (this **does not** mean the answer has to be 'excellent' or 'complete') The response might include the use of physics concepts and principles: eg momentum and impulse, internal resistance, refraction, etc., as well as related formulae and calculations. **3 marks** should be awarded to a candidate who has ♦ provided **mostly correct explanations** of the topic researched using physics terms/ideas which are at a depth appropriate to Higher Physics **2 marks** should be awarded to a candidate who has ♦ provided **some correct explanations** of the topic researched using physics terms/ideas which are at a depth appropriate to Higher Physics

			1 mark should be awarded to a candidate who has ♦ provided **only one correct explanation** of the topic researched, using physics terms/ideas which are at a depth appropriate to Higher Physics **0 marks:** The candidate fails to meet the minimum standards required for 1 mark.
Select information	Selects sufficient relevant data/information for inclusion in the report	2	**2 marks:** The data/information selected by the candidate for presentation/processing/analysis is both relevant **and** sufficient. **1 mark:** The data/information selected by the candidate for presentation/processing/analysis is relevant **but insufficient** **0 marks:** The data/information selected by the candidate for presentation/processing/analysis is **neither** relevant **nor** sufficient ♦ This could include raw data from an experiment/practical activity, extracted tables, graphs, diagrams and text. It might include, for example, statistical, graphical, numerical or experimental data; data/information from the internet; published articles or extracts; notes taken from a visit or talk; notes taken from a written or audio-visual source.
Process and present data/information	Data/information is processed and presented	4	**Processing** can include, for example: performing calculations, manipulating data, summarising referenced text (although the marks are awarded for processing, it must be clear where the raw or extracted data/information came from)

			Presenting processed data/information can include for example appropriate formats from: summary, graph, table, chart or diagram (one must be graph, table, chart or diagram). In each case, sufficient detail should be included to convey the data/information. In all cases the candidate must clearly reference the source of the original data. **4 marks** should be awarded to a candidate who has processed and presented all data/information correctly and appropriately **3 marks** should be awarded to a candidate who has processed all data/information correctly and appropriately and presented most data/information correctly and appropriately **or** who has processed most data/information correctly and appropriately and presented all data/information correctly and appropriately. **2 marks** should be awarded to a candidate who has processed and presented some of the data/information correctly and appropriately **1 mark** should be awarded to a candidate who has processed and presented little data/information correctly and appropriately. **0 marks:** The candidate fails to meet the minimum standards required for 1 mark.
Uncertainties	Reading and random uncertainties	1	**1 mark** Candidate includes appropriate reading and random uncertainties for their experimental work.

			0 marks: The candidate fails to meet the minimum standards required for 1 mark.
Analyse data/information	Data/information is analysed	2	**Analysis** will include interpreting data/information included in the report (which may/may not have been processed by the candidate) to identify relationships. This may include further calculations. **2 marks** for **correctly** analysing the data/information. **1 mark** for some correct analysis of the data/information. **0 marks:** The candidate fails to meet the minimum standards required for 1 mark.
Conclusion(s)	States valid conclusion(s)	1	**1 mark** for stating a conclusion that relate(s) to the aim(s) and is supported by evidence from the candidate's research. **0 marks:** The candidate fails to meet the minimum standards required for 1 mark.
Evaluation	Evaluation of the investigation	3	For marks to be awarded for evaluation, candidates must make judgements based on criteria. The criteria, upon which judgements of the investigation are made, may include the following (not an exhaustive list): ♦ robustness of findings ♦ validity of sources ♦ reliability of data/information ♦ evaluation of experimental procedure

			One mark for each valid, evaluative comment based on relevant criteria, to a maximum of three marks. **0 marks:** The candidate has not met the standards described for 1 mark.
Presentation	♦ Appropriate presentation ♦ References	2	Maximum of **2 marks** for the presentation of the report **1 mark** for each of: ♦ Appropriate title and structure ♦ The references to at least two sources used in the report are given in sufficient detail to allow them to be retrieved by a third party. If one of the sources is an experiment/practical activity, then the title and the aim should be recorded.
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Administrative information

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History of changes

Version	Description of change	Authorised by	Date

Security and confidentiality

This document can be used by practitioners in SQA approved centres for the assessment of National Courses and not for any other purpose.

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